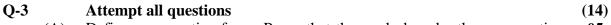
Enrollment No:			Exam Seat No:		
			AH UNIVERS		
		winter	Examination-20)18	
Subject	t Nan	e :Physics—I			
Subject Code :4SC01PHY1			Branch: B.Sc. (All)		
Semeste	er :1	Date :03/12/2018	Гіте: 02:30 То 05:30	Marks: 70	
(2) (3)	Use of Instruction Draw	actions written on main a	tor & any other electronic in answer book are strictly to be es (if necessary) at right placed.	obeyed.	
Q-1		Attempt the following q	ujestions		(14)
_			tween vectors and scalars?		01
	/	Name different types of v			01
	c)	Name two types of refere	ence frames.Differentiate the	m with reference to	
		Newton's 1 st law.			01
	,		ource in a network circuit.		01
		_	source in a network circuit.	to Crossites (a)	01 01
			and unit of Acceleration due itution (e). Give its formula	• 1- /	01
			e according to Newton's law		01
	-		Angular velocity(ω)andAngu		01
			ravitation. What is G ? Write		01
	-	Obtain acceleration due t	o gravity g of a place where	a simple pendulum	
			ns 30 oscillations in a minut	e.	01
			ple harmonic oscillations.		01
			constant (phase angle) in sin	nple harmonic	0.1
		notion? What are the functions/or	onligations of a Multimater?		01
	n)	what are the functions/aj	oplications of a Multimeter?		01
Attemp	t any	four questions from Q	-2 to Q-8		

Q-2		Attempt all questions	(14
	(A)	Describe scalar product of two vectors and their properties.	06
	(B)	Derive the formula for the Vector Triple Product of three vectors.	06
	(C)	If $\overrightarrow{A} = 2 \hat{\imath} - \hat{\jmath} + \hat{k}$ and $\overrightarrow{B} = 3 \hat{\imath} + 4 \hat{\jmath} - \hat{k}$. Obtain Unit-vector parallel	02
		to the resultant of these two vectors.	



(A) Define conservative force. Prove that the work done by the conservative 05



		force along a closed path is always zero.	
	(B)	Derive the work energy theorem.	05
	(C)	Write the statements of Newton's three laws of motion.	04
Q-4		Attempt all questions	(14
	(A)	Define Centre of Mass (CM). Obtain an expression for the centre of mass	05
	(B)	of Many-particle system. Define: Elastic collision. Derive two-dimension elastic collision formula.	05
	(B)	How much work is needed for a lift of mass 50 kg with one person of mass 50 kg inside it and moving from the ground floor to the total height of 50 meter at the 10 th floor in 1 minute?	04
Q-5		Attempt all questions	(14
•	(A)	Derive an expression for the angular momentum of a rigid body.	05
	(B)	Discuss rotational kinetic energy of a rigid body with necessary equation.	05
	(C)	A hollow cylinder of mass 3 kg and diameter 40 cm is rotating for 0.1 minute about its geometrical axis under the tangential force of 50 N by winding a thin string around it. Obtain the torque, moment of inertia, angular velocity, angular acceleration, angular momentum and rotational kinetic energy of the cylinder.	04
Q-6		Attempt all questions	(14
	(A)	What is escape velocity? Derive necessary expression for the escape velocity. Prove that the escape velocity from the Earth's surface is 11.2 km/s.	07
	(B)	State Kepler's laws of planetary motion.	03
	(\mathbf{C})	Write a short note on G.P.S.	04
Q-7		Attempt all questions	(14
	(A)	Describe Young's, Bulk and Rigidity modulus each by giving definition,	06
	(B)	figure, formula and unit only. What is angular (simple) harmonic motion? Derive the equation for its	05
	()	total energy $E = \frac{1}{2}I\omega^2\theta_{max}^2$.	•
	(C)	Obtain Young's modulus of a 100 cm long metal wire of diameter 1 mm experiencing elongation of 0.09 mm by 9 kg load. ($g = 3.12 \pi ms^{-2}$)	03
Q-8		Attempt all questions	(14
	(A)	Name any three network theorems for the circuit analysis. Discuss any	07
	(B)	one of them giving statement, circuit diagrams, formula and applications. What is self-induction? Obtain self-inductance formula $L = -\varepsilon/(\partial I/\Omega)$	07
	` /	∂t). Also, prove that energy stored in an inductor, when linked with magnetic field, is $W = (1/2)LI^2$.	

